# Investigations of Crohn's Disease

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MK, a 22-year-old dental student was brought to the emergency room by his father, because he was very worried about his son's worsening abdominal pain, which has been ongoing for the past five days.

The pain started in the epigastric area and moved to the right lower quadrant within the past day. He has had some loose, non bloody stools during the last 24 hours but has only gone three times or so during the last couple of weeks. He normally has two bowel movements per day and denies any bowel trouble prior to the last two weeks.

He has some nausea, but no vomiting, reflux symptoms, associated dysphagia, odynophagia, or urinary symptoms. He has had, however, a poor appetite over the last year. He has been capable of eating bland foods, such as plain meats, bread, and yogurt, but he has had difficulty eating other types of foods, such as fried foods, pastries, and spicy or highly seasoned foods. He denies having any symptoms involving the skin, eye, or mouth.

He has had similar bouts of illness over the last five years, but symptoms have usually settled within 24 hours. Multiple diagnoses were previously suggested, such as irritable bowel syndrome and appendicitis, but no investigations were done because of his subsiding symptoms.

## Meet MK

MK is a 22-year-old dental student, who recently immigrated to Canada from the Middle East with his parents and 18-year-old sister.

He is brought to the emergency room by his father who is concerned about the worsening abdominal pain his son has been experiencing over the last five days.

MK has also been experiencing some significant wieght loss. He attributes his weight loss to his not eating well lately, because he feels anxious about not knowing whether he will be able to continue his dental studies in Canada.

His past medical history includes an open right inguinal hernia repair five years ago and he has been experiencing the above symptoms of abdominal pain, lack of appetite, and nausea intermittently over the past five years.

His father is extremely worried, because this attack has lasted longer than usual and at this point, he suspects that his son may be suffering from a chronic condition, rather than a psychological one, as suggested on previous occasions by other practitioners.

His family history is unremarkable, as his parents and sister are all in good health.

## Examination

MK looked unwell and in pain. Temperature was 38.8°C. Pulse was 110/minute and BP

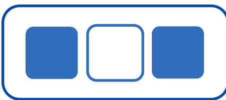
100/60 mmHg. His chest was clear, though he was somewhat restricted when taking deep breaths. His heart sounds were normal.

His abdominal examination revealed a soft abdomen with tenderness on deep palpation in the mid and right lower quadrant, but no rebound tenderness. Rectal examination was not done, but inspection did not reveal any sign of perianal disease.

Examination of the extremities was negative for clubbing or edema. After discussing the case with the Gastroenterologist on call in the local hospital, it was decided to admit MK for inpatient investigations.

### *Initial Investigations*

- A CBC revealed an Hb of 134 g/L with a normal hematocrit and mean corpuscular volume
- A white blood count was elevated to 20.9 x $10^9$ L with a neutrophil count of 16.4 x $10^9$ L
- Erythrocyte sedimentation rate was elevated at 98 mm for the first hour and C-reactive protein was 138 mg/L
- Renal, liver, and thyroid function tests were all within normal range as was the serum amylase
- Chest x-ray revealed clear lungs with unremarkable mediastinum and pleura
- Plain abdominal x-ray revealed few nonspecific prominent air-filled loops of bowel, within the lower abdomen. There were no air-fluid levels and no evidence of free intraperitoneal air
- Abdominal CT scan revealed a long segment of abnormal distal ileum with wall thickening and inflammatory stranding suggesting Crohn's disease.



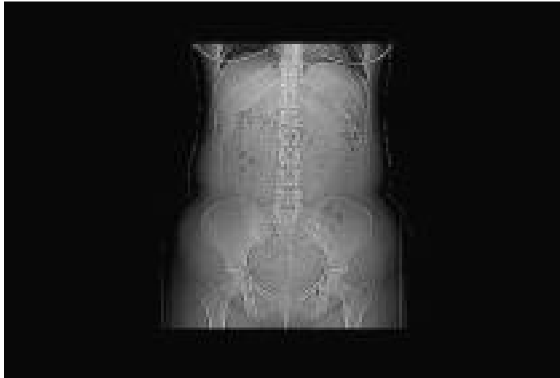


Figure 1: Non-specific bowel gas distribution

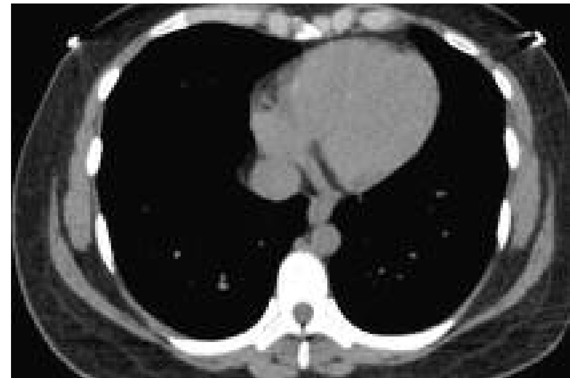


Figure 2: Prominent air-filled loops of bowel within the lower abdomen

- There was an ill-defined heterogeneous 3.5 x 3 cm area containing small pockets of air at the lower quadrant suspicious for abscess. Mild ascites in the pelvis were present

MK was initially treated with intravenous ciprofloxacin and metronidazole for two days without much improvement, after which he underwent ileocolic resection with pelvic abscess drainage with dramatic improvement.

The pathological examination revealed Crohn's ileitis with focal serositis and inflamed/hemorrhagic adhesions. The resection margins were viable and uninflamed. The regional lymph nodes showed reactive changes.

Crohn's disease is an inflammatory bowel disease that can affect any portion of the tubular gastrointestinal tract. It is a disease of unknown etiology and is marked by remissions and exacerbations. It occurs in about seven out of 100,000 people, typically in persons of European decent. Clinical features include symptoms that depend on the disease site.[1]

Ileal Crohn's disease features are abdominal pain, intra-abdominal abscess or acute obstruction, watery diarrhea without blood or mucus, and weight loss, or malabsorption. Some patients may also present with features of fat, protein, or vitamin deficiencies.

Crohn's colitis presents exactly like ulcerative colitis with bloody diarrhea, mucus, lethargy, malaise, anorexia, and weight loss. Rectal sparing and perianal disease suggest Crohn's disease rather than ulcerative colitis. Many patients will present with both small bowel and colonic disease. A few have isolated perianal disease, vomiting from jejunal strictures, or severe oral ulceration.

## *Second Set of Investigations*

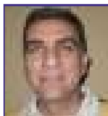
- CBC may show anemia from bleeding or malabsorption of iron, folic acid, or vitamin B12. Serum albumin is low due to protein-loosing enteropathy or because of poor nutrition
- ESR is raised in exacerbation or because of abscess
- CRP is helpful in monitoring disease activity
- Sigmoidoscopy should be performed in patients presenting with diarrhea as it will show patchy inflammation with discrete, deep ulcers, perianal disease, or rectal sparing
- Colonoscopy will reveal patchy abnormalities with intervening normal mucosa; ulcers and strictures are also common
- Barium enema and small bowel contrast studies are less sensitive than colonoscopy, and they may show areas of narrowing, ulceration, and strictures

- Abdominal CT scan will identify thickened small bowel and abscess
- MRI will delineate pelvic or perineal involvement with Crohn's disease

## *Prognosis*

Life expectancy in patients with Crohn's disease is now similar to that of the general population, and despite the burden of treatment, the majority of those with the disease are able to work and pursue a normal life.

Reference
1. Innes JA: Davidson's Essentials of Medicine. First Edition. Churchill Livingstone/Elsevier, Edinburgh, 2009.



Hayder Kubba, MBChB, LMCC, CCFP, FRCS(UK), DFFP, DPD graduated from the University of Baghdad, where he initially trained as a Trauma Surgeon. He moved to Britain, where he received his FRCS and worked as an ER Physician before specializing in Family Medicine. He is currently a Family Practitioner in Mississauga, Ontario.